

## SEQUENCE LISTING

## (1) GENERAL INFORMATION:

- (i) APPLICANT: Yamamoto, Janet K.
- (ii) TITLE OF INVENTION: Multi-Subtype FIV Vaccines
- (iii) NUMBER OF SEQUENCES: 16
- (iv) CORRESPONDENCE ADDRESS:
  - (A) ADDRESSEE: Saliwanchik & Saliwanchik
  - (B) STREET: 2421 N.W. 41st Street, Suite A-1
  - (C) CITY: Gainesville
  - (D) STATE: Florida
  - (E) COUNTRY: USA
  - (F) ZIP: 32606
- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
  - (B) COMPUTER: IBM PC compatible
  - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
  - (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER: US
  - (B) FILING DATE:
  - (C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
  - (A) NAME: Pace, Doran R.
  - (B) REGISTRATION NUMBER: 38,261
  - (C) REFERENCE/DOCKET NUMBER: UF152
- (ix) TELECOMMUNICATION INFORMATION:
  - (A) TELEPHONE: (904) 375-8100
  - (B) TELEFAX: (904) 372-5800

## (2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 22 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Gly Ser Trp Phe Arg Ala Ile Ser Ser Trp Lys Gln Arg Asn Arg Trp

1                      5                      10                      15

Glu Trp Arg Pro Asp Phe  
20

(2) INFORMATION FOR SEQ ID NO:2:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 14 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Gln Glu Leu Gly Cys Asn Gln Asn Gln Phe Phe Cys Lys Ile  
1                      5                      10

(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

GAAATGTATA ATATTGCTGG

20

(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

GAATTGATTT TGATTACATC C

21

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

TAGTAGTTAT AGTGGTACTA

20

(2) INFORMATION FOR SEQ ID NO:6:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

TCTTTAAGGC TTCAGTCACC T

21

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

GTACAAATAG TAGTAGTACA A

21

## (2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TCTTTAAGGC TTCAGTCACC T

21

## (2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

GGGACTACTA GCAATGGAAT A

21

## (2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

AGTGCCTCAG TTATTTTATC C

21

## (2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid

- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

TGGGACTGAT GATAGTAAAA C

21

(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

AGTGCCTCAG TTATTTTATC C

21

(2) INFORMATION FOR SEQ ID NO:13:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

TGGGACTGAT AATAGTGAAA C

21

(2) INFORMATION FOR SEQ ID NO:14:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 21 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

AGTGCCTCAG TTATTTTATC C

21

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 19 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

TCATCATTTT CAACATGTC

19

(2) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 20 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

AATGCTTCAG TTATTGATC

20

### References Cited

- Pedersen, Niels C., Janet K. Yamamoto, U.S. Patent No. 5,037,753, issued August 6, 1991.
- 5 Pedersen, Niels C., Janet K. Yamamoto, U.S. Patent No. 5,118,602, issued June 2, 1992.
- Byars, N.E., A.C. Allison (1987) "Adjuvant formulation for use in vaccines to elicit both cell-mediated and humoral immunity," *Vaccine* 5:223-228.
- 10 Pedersen, N.C., E.W. Ho, M.L. Brown, J.K. Yamamoto (1987) "Isolation of a T-lymphotropic virus from domestic cats with an immunodeficiency-like syndrome," *Science* 235:790-793.
- Yamamoto, J.K., N.C. Pedersen, E.W. Ho, T. Okuda, G.H. Theilen (1988a) "Feline immunodeficiency syndrome - a comparison between feline T-lymphotropic lentivirus and feline leukemia virus," *Leukemia*, December Supplement 2:204S-215S.
- 15 Yamamoto, J.K., E. Sparger, E.W. Ho, P.H. Andersen, T.P. O'Connor, C.P. Mandell, L. Lowenstine, N.C. Pedersen (1988) "Pathogenesis of experimentally induced feline immunodeficiency virus infection in cats," *Am. J. Vet. Res.* 49:1246-1258.
- 20 Ackley, C.D., J.K. Yamamoto, N.B. Levy, N.C. Pedersen, M.D. Cooper (1990) "Immunologic abnormalities in pathogen-free cats experimentally infected with feline immunodeficiency virus," *J. Virol.* 64:5652-5655.
- 25 Olmsted, R.A., A.K. Barnes, J.K. Yamamoto, V.M. Hirsch, R.H. Purcell, P.R. Johnson (1989) "Molecular cloning of feline immunodeficiency virus," *Proc. Natl. Acad. Sci.* 86:2448-2452.
- 30 Olmsted, R.A., V.M. Hirsch, R.H. Purcell, P.R. Johnson (1989) "Nucleotide sequence analysis of feline immunodeficiency virus: Genome organization and relationship to other lentivirus," *Proc. Natl. Acad. Sci. USA* 86:8088-8092.
- 35 Talbott, R.L., E.E. Sparger, K.M. Lovelace, W.M. Fitch, N.C. Pedersen, P.A. Luciw, J.H. Elder (1989) "Nucleotide sequence and genomic organization of feline immunodeficiency virus," *Proc. Natl. Acad. Sci. USA* 86:5743-5747.
- 40 Hosie, M.J., O. Jarrett (1990) "Serological responses of cats to feline immunodeficiency virus," *AIDS* 4:215-220.
- Sodora, D.L., E.G. Shpaer, B.E. Kitchell, S.W. Dow, E.A. Hoover, J.I. Mullins (1994) "Identification of three feline immunodeficiency virus (FIV) env gene subtype and

comparison of the FIV and human immunodeficiency virus type 1 evolutionary patterns," *J. Virol.* 68:2230-2238.

- 5 Rigby, M.A., E.C. Holmes, M. Pistello, A. Mackay, A.J. Leigh-Brown, J.C. Neil (1993) "Evolution of structural proteins of feline immunodeficiency virus: molecular epidemiology and evidence of selection for change," *J. Gen. Virol.* 74:425-436.
- 10 Kakinuma, S., K. Motokawa, T. Hohdatsu, J.K. Yamamoto, H. Koyama, H. Hashimoto (1995) "Nucleotide Sequence of Feline Immunodeficiency Virus: Classification of Japanese Isolates into Two Subtypes Which Are Distinct from Non-Japanese Subtypes," *Journal of Virology* 69(6):3639-3646.
- 15 Johnson, C.M., B.A. Torres, H. Koyama, J.K. Yamamoto (1994) "FIV as a model for AIDS vaccination," *AIDS Res. Hum. Retroviruses* 10:225-228.
- 20 Yamamoto, J.K., T. Hohdatsu, R.A. Olmsted, R. Pu, H. Louie, H. Zochlinski, V. Acevedo, H.M. Johnson, G.A. Soulds, M.B. Gardner (1993) "Experimental vaccine protection against homologous and heterologous strains of feline immunodeficiency virus," *J. Virol.* 67:601-605.
- 25 Yamamoto, J.K., T. Okuda, C.D. Ackley, H. Louie, H. Zochlinski, E. Pembroke, M.B. Gardner (1991a) "Experimental vaccine protection against feline immunodeficiency virus," *AIDS Res. Hum. Retroviruses* 7:911-922.
- 30 Yamamoto, J.K., C.D. Ackley, H. Zochlinski, H. Louie, E. Pembroke, M. Torten, H. Hansen, R. Munn, T. Okuda (1991b) "Development of IL-2-independent feline lymphoid cell lines chronically infected with feline immunodeficiency virus: importance for diagnostic reagents and vaccines," *Interviol.* 32:361-375.
- 35 Murphy, F., D.W. Kingsbury (1990) "Virus Taxonomy," In *Fields Virology*, 2nd Ed., B.N. Fields, D.M. Knipe *et al.*, eds, Raven Press, New York, Chapter 2, pp. 9-36.
- 40 Louwagie, J., F.E. McCutchan, M. Peeters, T.P. Brennan, E. Sanders-Buell, G.A. Eddy, G. van den Groen, K. Fransen, G.M. Gershy-Damet, R. Deleys, D.S. Burke (1993) "Phylogenetic analysis of gag genes from 70 international HIV-1 isolates provides evidence for multiple genotypes," *AIDS* 7:769-780.
- 40 Rey, M.A., B. Spire, D. Dormont, F. Barre-Suinoussi, L. Montagnier, J.C. Chermann (1984) "Characterization of the RNA dependent DNA polymerase of a new human T-lymphotropic retrovirus 1(lymphadenopathy associated virus)," *Biochem. Biophys. Res. Commun.* 21:1247-1253.



Magazine, H.I, J.M. Carter, J.K, Russell, B.A. Torres, B.M. Dunn, H.M. Johnson (1988)  
“Use of synthetic peptides to identify and end terminal epitope on mouse gama ifn  
that may be involved in function,” *Proc. Natl. Acad. Sci. USA* 85:1237.

- 5 Okada, S., R. Pu, E. Young, W. Stoffs, J.K. Yamamoto (1994) “Superinfection of cats with  
FIV Subtypes A and B,” *AIDS Res. Hum. Retroviruses* 10:1739-1746.

Yamamoto, Janet K., Niels C. Pedersen, U.S. Patent No. 5,275,813, issued January 4, 1994.